**Roscini et al-ESM**

**Title and captions of ESM**

**Figure S1.** FTIR spectra of DSM70449 cells exposed to the four inhibitors.

**Legend.** Each sample is presented in triplicate. The four compounds are represented by the different colors as detailed: Black = Control Sample; Red = Acetic Acid; Green = Formic Acid; Blue = Furfural; Orange = HMF.

**Figure S2.** FTIR spectra of DSM70449 cells exposed to the four inhibitors in binary mixtures.

**Legend.** Each sample is presented in triplicate. The binary mixtures are represented by the different colors as detailed: Blue = Acetic Acid RC25 + Furfural RC25; Red = Acetic Acid RC50 + Furfural RC50; Pink = Acetic Acid RC25 + HMF RC25; Light Green = Acetic Acid RC50 + HMF RC50; Light Blue = Acetic Acid RC25 + Formic Acid RC25; Dark Green = Acetic Acid RC50 + Formic Acid RC50; Grey = Formic Acid RC25 + Furfural RC25; Dark Blue = Formic Acid RC50 + Furfural RC50; Dark Red = Formic Acid RC25 + HMF RC25; Orange = Formic Acid RC50 + HMF RC50;

**Figure S3.** FTIR spectra of DSM70449 cells exposed to the four inhibitors in ternary mixtures.

**Legend.** Each sample is presented in triplicate. The ternary mixtures are represented by the different colors as detailed: Blue = Acetic Acid RC25 + Furfural RC25+ Formic Acid RC25; Red = Acetic Acid RC50 + Furfural RC50+ Formic Acid RC50; Pink = Acetic Acid RC25 + HMF RC25+ Furfural RC25; Light Green = Acetic Acid RC50 + HMF RC50+ Furfural RC50; Light Blue = Acetic Acid RC25 + Formic Acid RC25+ HMF RC25; Dark Green = Acetic Acid RC50 + Formic Acid RC50+ HMF RC50; Grey = Formic Acid RC25 + Furfural RC25+ HMF RC25; Orange = Formic Acid RC50 + Furfural RC50 + HMF RC50.

**Figure S4.** FTIR spectra of DSM70449 cells exposed to the four inhibitors in quaternary mixtures.

**Legend.** Each sample is presented in triplicate. The quaternary mixtures are represented by the different colors as detailed: Blue = Acetic Acid RC25 + Furfural RC25+ Formic Acid RC25+ HMF RC25; Red = Acetic Acid RC50 + Furfural RC50+ Formic Acid RC50+ HMF RC50; Light Green = Acetic Acid RC100 + HMF RC100+ Furfural RC100;+ HMF RC100.

**Figure S5.** FTIR spectra of Fm17 cells exposed to the four inhibitors.

**Legend.** Each sample is presented in triplicate. The four compounds are represented by the different colors as detailed: Black = Control Sample; Red = acetic acid; Green = formic acid; Blue = furfural; Orange = HMF.

**Figure S6.** FTIR spectra of Fm17 cells exposed to the four inhibitors in binary combinations.

**Legend.** Each sample is presented in triplicate. The binary mixtures are represented by the different colors as detailed: Blue = Acetic Acid RC25 + Furfural RC25; Red = Acetic Acid RC50 + Furfural RC50; Pink = Acetic Acid RC25 + HMF RC25; Light Green = Acetic Acid RC50 + HMF RC50; Light Blue = Acetic Acid RC25 + Formic Acid RC25; Dark Green = Acetic Acid RC50 + Formic Acid RC50; Grey = Formic Acid RC25 + Furfural RC25; Dark Blue = Formic Acid RC50 + Furfural RC50; Dark Red = Formic Acid RC25 + HMF RC25; Orange = Formic Acid RC50 + HMF RC50;

**Figure S7.** FTIR spectra of Fm17 cells exposed to the four inhibitors in ternary mixtures.

**Legend.** Each sample is presented in triplicate. The ternary mixtures are represented by the different colors as detailed: Blue = Acetic Acid RC25 + Furfural RC25+ Formic Acid RC25; Red = Acetic Acid RC50 + Furfural RC50+ Formic Acid RC50; Pink = Acetic Acid RC25 + HMF RC25+ Furfural RC25; Light Green = Acetic Acid RC50 + HMF RC50+ Furfural RC50; Light Blue = Acetic Acid RC25 + Formic Acid RC25+ HMF RC25; Dark Green = Acetic Acid RC50 + Formic Acid RC50+ HMF RC50; Grey = Formic Acid RC25 + Furfural RC25+ HMF RC25; Orange = Formic Acid RC50 + Furfural RC50 + HMF RC50.

**Figure S8.** FTIR spectra of Fm17 cells exposed to the four inhibitors in quaternary mixtures.

**Legend.** Each sample is presented in triplicate. The quaternary mixtures are represented by the different colors as detailed: Blue = Acetic Acid RC25 + Furfural RC25+ Formic Acid RC25+ HMF RC25; Red = Acetic Acid RC50 + Furfural RC50+ Formic Acid RC50+ HMF RC50; Light Green = Acetic Acid RC100 + HMF RC100+ Furfural RC100;+ HMF RC100.

**Figure S9.** FTIR spectra of Fp84 cells exposed to the four inhibitors.

**Legend.** Each sample is presented in triplicate. The four compounds are represented by the different colors as detailed: Black = Control Sample; Red = acetic acid; Green = formic acid; Blue = furfural; Orange = HMF.

**Figure S10.** FTIR spectra of Fp84 cells exposed to the four inhibitors in binary mixtures.

**Legend.** Each sample is presented in triplicate. The binary mixtures are represented by the different colors as detailed: Blue = Acetic Acid RC25 + Furfural RC25; Red = Acetic Acid RC50 + Furfural RC50; Pink = Acetic Acid RC25 + HMF RC25; Light Green = Acetic Acid RC50 + HMF RC50; Light Blue = Acetic Acid RC25 + Formic Acid RC25; Dark Green = Acetic Acid RC50 + Formic Acid RC50; Grey = Formic Acid RC25 + Furfural RC25; Dark Blue = Formic Acid RC50 + Furfural RC50; Dark Red = Formic Acid RC25 + HMF RC25; Orange = Formic Acid RC50 + HMF RC50;

**Figure S11.** FTIR spectra of strain Fp84 cells exposed to the four inhibitors in ternary mixtures.

**Legend.** Each sample is presented in triplicate. The ternary mixtures are represented by the different colors as detailed: Blue = Acetic Acid RC25 + Furfural RC25+ Formic Acid RC25; Red = Acetic Acid RC50 + Furfural RC50+ Formic Acid RC50; Pink = Acetic Acid RC25 + HMF RC25+ Furfural RC25; Light Green = Acetic Acid RC50 + HMF RC50+ Furfural RC50; Light Blue = Acetic Acid RC25 + Formic Acid RC25+ HMF RC25; Dark Green = Acetic Acid RC50 + Formic Acid RC50+ HMF RC50; Grey = Formic Acid RC25 + Furfural RC25+ HMF RC25; Orange = Formic Acid RC50 + Furfural RC50 + HMF RC50.

**Figure S12.** FTIR spectra of Fp84 cells exposed to the four inhibitors in quaternary mixtures.

**Legend.** Each sample is presented in triplicate. The quaternary mixtures are represented by the different colors as detailed: Blue = Acetic Acid RC25 + Furfural RC25+ Formic Acid RC25+ HMF RC25; Red = Acetic Acid RC50 + Furfural RC50+ Formic Acid RC50+ HMF RC50; Light Green = Acetic Acid RC100 + HMF RC100+ Furfural RC100;+ HMF RC100.